stiffness of the knee under an anterior drawer force and the structural properties of the femur-graft-tibia complex were evaluated.
Results: The remnant preservation significantly accelerated revascularization in the grafted tendon, and significantly increased the number of mechanoreceptors in the reconstructed ACL at 4 and 12 weeks. The remnant preservation significantly improved the anterior translation and the initial stiffness of the ACL-reconstructed knee in drawer testing at 12 weeks.
Discussion: Preservation of the remnant tissue in ACL reconstruction not only enhanced cell proliferation, revascularization, and regeneration of proprioceptive organs in the reconstructed ACL, but also improved the knee stability.
Conclusion: Preservation of the remnant tissue may be beneficial in improving the clinical outcome of ACL reconstruction.
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B0015
Research of biocompatibility of PET artificial ligament modified by silk fibroin coating in vitro and in vivo

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Background: To investigate the effect of silk fibroin (SF) coating for the cell compatibility *in vitro* of polyethylene terephthalate (PET) material and for the ligamentization of intra-articular segment *in vivo* of PET artificial ligament.
Methods: The surface of PET artificial ligament was treated by plasma, and then PET artificial ligament was soaked in an SF solution. BALB / C CL7 mice ligament fibroblasts was cultured in the uncoated-PET material (control group), SF coating-PET material (SF group). Subsequently, scanning electron microscope (SEM), methyl thiazolyl tetrazolium (MTT), cell cycle analysis, collagen protein and DNA content was detected. Furthermore, the mRNA expression levels of fibronectin (FN), β-actin, integrin α1 and integrin β1 were also detected. Intra-articular segment of PET artificial ligament was coated by SF, which was used to reconstruct Beagles's anterior cruciate ligament (ACL). The coverage of intra-articular synovial tissue covering the artificial ligament was assessed.
Results: The results of SEM, MTT and cell cycle analysis showed SF group could significantly improve the proliferation of BALB/C CL7 mice ligament fibroblasts ($P<0.05$). Collagen protein and DNA content analysis showed that the specific surface area was increased by 3D structure in the SF group ($P<0.05$), which provides a good growth substrate for the high density culture of BALB/C CL7 mice ligament fibroblasts. MRNA expression analysis of FN, β-actin, integrin α1 and integrin β1 showed that the normal BALB/C CL7 mice ligament fibroblasts related gene expression was not changed in the PET-SF composite materials ($P>0.05$). One month after ACL reconstruction, synovial tissue coverage in the SF group and control group was $85.4 \pm 4.3\%$ and $62.8 \pm 5.7\%$, respectively ($P < 0.05$). Moreover, three months after ACL reconstruction, synovial tissue coverage in the SF group and control group was $97.7 \pm 2.1\%$ and $92.5 \pm 4.3\%$, respectively ($P>0.05$).
Conclusion: PET-SF composite materials has good cell biocompatibility *in vitro*. *ACL* reconstruction *in vivo* confirmed that the SF coating could improve the coverage of intra-articular synovial tissue covering the artificial ligament early, which speeds up the process of ligamentization.
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B0018
The middle to long term results of reconstruction of stiff elbow under arthroscopy technique

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Objective: To evaluate the middle to long term results of reconstruction of stiff elbow under arthroscopy technique.
Methods: To re-evaluate the clinical results of the 38 stiff elbows treated under arthroscopy technique previously, and to compare the clinical results between the early follow-up and the middle – long term follow up.
Results: There were 36 patients completed the follow-up. There were 24 male and 12 female. The age was 47.8 years old on average (14-65 years old) and the average follow up time was 71.5 months (60-96 months). The preoperative average range of motion for the 36 patients was $80.1 \pm 24.4°$, which increased to $121.4 \pm 24.8°$at six months postoperatively and was $118.6 \pm 24.0°$at the final follow up time; the averaged MEPS was 70.4 ± 16.6 preoperatively, which increased to 89.4 ± 16.5 at six months postoperatively and was 88.6 ± 15.8 at the final follow up time; whereas the averaged VAS score was 2.8 ± 2.2 preoperatively, which decreased to 0.5 ± 0.5 at six months postoperatively and was 0.6 ± 1.0 at the final follow up time. The middle-long term follow up showed superiorly results in terms of range of motion, MEPS (Mayo Elbow Performance Score), VAS for pain compared with preoperative results, whereas showed no significant difference compared with short term follow up results.
Conclusion: The arthroscopy is an effective technique to reconstruct the function of the stiff elbow, and the clinical results did not decrease with time.
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B0022
The validity of the classification for lateral hinge fractures in open wedge high tibial osteotomy

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Background: Open wedge high tibial osteotomy (OWHTO) for knee osteoarthritis has become an increasingly performed technique. However, various complications including lateral hinge fracture (LHF) have been reported. Takeuchi et al. classified LHFs into three anatomically based types, related to the proximal tibiofibular joint. Here, the objective of this study was to validate the efficacy of their classification.
Material: Patients treated with OWHTO using TomoFix between 2009 and 2012 were investigated. The knees were divided into non-fracture (59 knees) and LHF (15 knees) groups, and the LHF group was further divided into Takeuchi types I, II, and III (seven, two, and six knees, respectively).
Method: The Japanese Orthopaedic Association (JOA) score and range of knee flexion were assessed pre-operatively and one year after OWHTO. The details of postoperative course were reported in LHF group.
Results: Pre-operative characteristics (age, gender and body mass index) showed no significant difference between the two groups. The mean JOA score was significantly improved one year after operation regardless of the presence or absence of LHF ($p < 0.005$, $p < 0.001$, respectively). However, six of seven type I cases had no LHF-related complications; both type II cases had delayed union; and of six type III cases, two had delayed union with correction loss and one had overcorrection.
Discussion: These results suggest that Takeuchi type II and III LHFs are structurally unstable compared to type I. [Conclusion] Takeuchi classification can provide an indication of potential complications relating to bone union after OWHTO.
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B0025
Enhancement of polyethylene terephthalate artificial ligament graft osseointegraftion using a periosteum patch in a goat model

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Purpose: to investigate whether a periosteum patch could enhance polyethylene terephthalate (PET) artificial ligament graft osseointegration in bone tunnel.
Methods: Twelve female goats underwent ACL reconstruction with PET artificial ligament graft in the right knees. Right knees in six goats were reconstructed with periosteum patch enveloped PET grafts (Periosteum group) in the tibia bone tunnel, whereas the other six goats had no periosteum patch made as the control group. All the goats were sacrificed at 12 months after surgery. Three tibial-graft complex samples in each group were harvested for microcomputed tomography (micro-CT) scan, magnetic resonance imaging (MRI) scan and histological evaluation consecutively. The other three tibial-graft complex samples in each group were harvested for biomechanical testing.
Results: The mean pull-out load of the Periosteum group at 12 months was significantly higher than that of the control group ($p < 0.05$). According to micro-CT scan, more new bone formation was observed at the graft-bone interface in the Periosteum group compared with the control group. Furthermore, MRI showed that the Periosteum group appeared to have a better graft osseointegration within the bone tunnel compared with the control group. Histologically, application of periosteum patch induced more new bone and Sharpey's fiber formation between graft and bone tunnel compared with the controls.
Conclusion: The study has shown that periosteum enveloping on the PET artificial ligament has a positive effect in the induction of artificial ligament osseointegration within the bone tunnel.
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B0030
All-arthroscopic anatomical reconstruction of anterior talofibular ligament using semitendinosus autografts

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Purpose: To show a new technique of all-arthroscopic anatomical anterior talofibular ligament reconstruction (ATFL) using semitendinosus autografts and fixed with double suture anchor for chronic ATFL rupture.
Methods: From January 2013 to February 2014, 12 patients (9 male and 3 female), underwent an arthroscopic anatomic reconstruction of the ATFL for chronic ATFL rupture with double suture anchors in tibia. Their ages ranged from 18 to 32 giving a mean age of 26 years. The American Orthopaedic Foot and Ankle Society (AOFAS) score was administered to assess the functional status; clinical examination and conventional radiographs were performed in all patients.
Results: 12 patients were followed up for an average of 19.3 months (13-26 months). The mean AOFAS score was 93.25 (range 80-100) at the last follow-up (P=, T=). Postoperative AOFAS scores were graded as excellent and good in all patients. One patient undergone transient sural